

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: Pensions in the U.S. Economy

Volume Author/Editor: Zvi Bodie, John B. Shoven, and David A. Wise, eds.

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-06285-6

Volume URL: <http://www.nber.org/books/bodi88-1>

Publication Date: 1988

Chapter Title: Introduction to "Pensions in the U.S. Economy"

Chapter Author: Zvi Bodie, John B. Shoven, David A. Wise

Chapter URL: <http://www.nber.org/chapters/c6042>

Chapter pages in book: (p. 1 - 8)

Introduction

Zvi Bodie, John B. Shoven, and David A. Wise

This is the fourth in a series of National Bureau of Economic Research (NBER) conference volumes on pensions in the United States. The first was *Financial Aspects of the United States Pension System*, the second, *Pensions, Labor, and Individual Choice*, and the third, *Issues in Pension Economics*.

This volume begins with a series of four papers on retirement saving of individuals and the saving which results from corporate funding of their pension plans. The first paper discusses individual retirement accounts (IRAs). The second considers reasons why more individual retirement saving is not used to purchase annuities. The third examines the reasons for recent reductions in saving through private pension plans. The fourth deals with poverty among retirees, whose saving preparation for retirement may have been inadequate. Following are two papers that address particular aspects of pension plans themselves: The first considers the relative merits of defined benefit versus defined contribution plans from the perspective of the employee wishing to avoid retirement income uncertainty. The second is an empirical investigation of the relationship between pension plan provisions and job turnover.

Individual and Corporate Retirement Saving Behavior

Individual Saving for Retirement: IRAs and Annuities

While increasingly large numbers of employees are covered by pension plans, many are not. In recognition of this fact, individual retire-

Zvi Bodie is a professor of finance and economics at the School of Management, Boston University, and a research associate of the National Bureau of Economic Research. John B. Shoven is a professor of economics at Stanford University and a research

ment accounts (IRAs) were established as part of the Employee Retirement Income Security Act (ERISA) to encourage employees without private plans to save for retirement. The Economic Recovery Tax Act of 1981, emphasizing the need to increase national saving as well as the need to prepare for retirement, extended the availability of IRAs to all employees. The principal incentive of IRAs for saving is that federal taxes on contributions and accrued interest are paid only when funds are withdrawn from the accounts. In particular, if the rate of return on saving is $r(1 - t)$, where t is the marginal tax rate, the return on IRAs is r . There is a penalty, however, for withdrawal of funds before age 59½, presumably to discourage using these tax-deferred saving vehicles for nonretirement purposes. Any employee can now contribute \$2000 to an IRA each year; an employee and a nonworking spouse can contribute \$2250. Recent tax proposals have suggested substantial increases in these limits.

“The Determinants of IRA Contributions and the Effect of Limit Changes” are analyzed by David A. Wise and Steven F. Venti. They find that IRAs are no more likely to be used by those without than by those with private pension plans, after controlling for income and other individual attributes. Thus, they do not, in general, serve as a substitute for private pension plans. Nonetheless, many persons with or without private plans who contribute to IRAs may save more than they otherwise would. An annual contribution of \$2000 to an IRA represents much more in future retirement income than most private pension plans. The extent to which IRAs represent actual increases in individual saving, versus a substitute for other forms of saving, is not addressed in this paper, but this will be addressed in subsequent work by the authors.

About 72 percent of all contributors have incomes between \$10,000 and \$40,000, although only about 20 percent of persons in this income interval have an IRA. Only about 5 percent of employees with incomes less than \$10,000 have IRAs, while approximately 60 percent of those with incomes greater than \$100,000 do.

Although they are not typically substitutes for private pensions and are uncommon among low-income employees, IRA limit increases like those currently under consideration would lead to substantial increases in tax-deferred saving according to the estimates in the paper. For example, if both employee and spousal limits were raised to \$2500, their estimates indicate that total IRA contributions would increase by about 30 percent.

associate of the National Bureau of Economic Research. David A. Wise is the John F. Stambaugh Professor of Political Economy at the John F. Kennedy School of Government, Harvard University, and a research associate of the National Bureau of Economic Research.

Model estimates based on Canadian Registered Retirement Savings Plan (RRSP) data, the counterpart of IRA and Keogh plans in the United States, are very similar to the U.S. estimates, even though the Canadian plan has been in effect since 1957 and the contribution limits are very different from those in the United States. Thus, similar parameter estimates in the two countries tend to lend support to the behavioral implications of the model specifications.

If saving for retirement is a major motivation for saving, it is puzzling that more of it does not take the form of the accumulation of annuities. Annuities have the advantage of insuring the individual against a very long life, thus tending to reduce the cost of financing a particular standard of living in retirement. They do have some disadvantages, of course. First, they leave no bequeathable wealth. Second, in the real world, annuities are not indexed for inflation, and, therefore, they are less adequate in providing long life insurance than indexed annuities would be. Third, the private voluntary annuity market suffers from adverse selection. Those who purchase them tend to live longer than the general population, so there is less risk pooling than with universal participation.

Friedman and Warshawsky provide an interesting examination of why the market for individual annuities is so thin. In the first section of their paper, they provide the first careful computation of the “load factor” charged by insurance companies on annuity policies. That is, they compare the cost of the annuity with the expected present value of the benefits evaluated at two market interest rates. When they do this calculation using general population mortality assumptions, they find that the load factor ranges from 20 percent to 55 percent, depending on the issuing company and the interest rate assumption. When they take account of the better mortality experience of annuity purchasers (the adverse selection problem, from the point of view of the insurance company), the load factor ranges from 6 percent to 40 percent. The average load factor is in the 25 percent range. This is not above the load factor for other types of insurance policies.

Friedman and Warshawsky develop an extended version of the life-cycle saving and portfolio behavior model which incorporates a bequest motive, uncertain lifetimes, and the presence of Social Security. They find, for reasonable parameterizations of their model, that the load factor would have to be much larger than they calculate it to be in order to account for observed behavior in the absence of a bequest motive. However, they find that a modest weight on bequests in lifetime utility can lead to model behavior consistent with observations. Their paper, thus, indicates that it is the structure of preferences at least as much as the load factor which is responsible for the predominance of saving in forms other than annuities.

Corporate Saving for Retirement

Bernheim and Shoven's paper, "Pension Funding and Saving," first documents a series of facts regarding the funding of corporate and government pensions as a source of loanable funds saving in the economy. They find that despite the fact that 70 percent of pension plans are defined contribution, 70 percent of assets and participants are covered by defined benefit plans. Clearly, defined benefit plans are much larger on average. They also note that the net contributions (net of payouts) to pensions are a major and growing part of personal saving in the economy. In the 1950s, pension accumulations amounted to roughly a quarter of personal saving; in the second half of the 1970s, pensions accounted for more than half of personal saving; and in the first four years of the 1980s, pensions accounted for 92 percent of personal saving.

The main point of the Bernheim-Shoven paper, however, is that pension saving may be the answer to why personal saving has not increased in spite of the several saving and investment incentives enacted by the Reagan administration. Defined benefit pensions, by their very nature, have negative contribution elasticities with respect to the rate of return on financial securities. That is, the higher the earnings on the pension fund assets, the lower are new contributions. To see this, one simply needs to look at a defined benefit pension plan from the perspective of the firm. The firm has pension obligations based on its employees' salaries and years of service. In order to compute the adequacy of its funding of those promises, the firm typically projects the future obligations and then discounts them to obtain their present value using an assumed interest rate (which amounts to the assumed rate of return on assets funding the plan). It then compares this derived expected present value of liabilities to the pension fund's assets to compute the unfunded liability and to determine the appropriate level of contributions. Clearly, this is the classic example of target saving, and a higher rate of return permits meeting the target with lower contribution levels.

Bernheim and Shoven estimate the magnitude of the negative elasticity both econometrically and with a simple analytic model. The two approaches lead to consistent conclusions. Namely, they find that the negative elasticity is large and significant for net pension contributions. A 1 percentage point increase in real interest rates, for instance, is predicted to decrease net pension contributions in the long run by between 20 and 30 percent. Such sensitivity is consistent with the recent weakness in pension funding and in personal saving in general in the United States.

Inadequacies in Saving of Current Retirees

In their paper “Poverty among the Elderly: Where Are the Holes in the Safety Net?” Michael J. Boskin and John B. Shoven supplement previous research, which has concentrated on the elderly as a whole or on representative elderly, with an in-depth examination of those who end up poor in retirement. First, they find that a nontrivial fraction of the elderly in the Retirement History Survey (those where the household head was born between 1905 and 1911) either remained poor, became poor, or had a much lower standard of living in retirement than earlier in their life. This occurred despite the enormous general improvement of the economic status of the elderly, part of which was made possible by very large increases in real Social Security benefits.

Examination of the characteristics of those who fell through the safety net reveals that women, especially widows, were the most likely candidates for economic difficulty in this cohort in this stage of their lives.

A variety of other variables seem to be related to the probability of low incomes and/or low replacement rates. For example, those who retired relatively early tended to be more likely to be poor and/or to have low replacement rates. This partly reflects particular institutional features surrounding Social Security and its double indexing for a brief period, but it also reflects in part factors influencing retirement in the first place.

A variety of other intriguing findings are mentioned, including the sharp differences in realizations of retirement income expectations among those who were poor and/or had low replacement rates relative to those who did well. Perhaps much of this seems self-evident in retrospect, but it is important to attempt to get behind these numbers to the reasons why these events occurred. Undoubtedly, many of them had case-specific causes. The results of this study suggest a need for further research on the structure and nature of the survivorship and annuity features of pensions; the coverage and marital status provisions of Social Security; as well as a more detailed study of the relationships between actual retirement income outcomes and expectations.

Corporate Pension Financing and Employee Pension Effects

Corporate Funding and Investment Policy

In “Defined Benefit versus Defined Contribution Pension Plans: What Are the Real Trade-offs?” Zvi Bodie, Alan J. Marcus, and Robert C. Merton concentrate on the differences between defined benefit and

defined contribution plans from the point of view of the employee. Their emphasis is on the risk aspects of the two types of plans.

Defined benefit (DB) and defined contribution (DC) pension plans have significantly different characteristics with respect to the risks faced by employers and employees, the sensitivity of benefits to inflation, the flexibility of funding, and the importance of governmental supervision. Bodie, Marcus, and Merton examine some of the main trade-offs involved in the choice between DB and DC plans. Their most general conclusion is that neither type of plan can be said to wholly dominate the other from the perspective of employee welfare.

The major advantage of DB plans is their potential for providing a stable replacement rate of final income to workers. The pegging of benefits in DB plans to final average wage would appear to provide employees with a type of income maintenance insurance not available in DC plans. This conclusion is, however, not robust. If wage paths are unpredictable at the start of a career, then individuals may view it as very risky to have their retirement benefits depend so heavily on final salary. Indeed, employees might prefer a retirement benefit tied to inflation-adjusted career average earnings to eliminate excessive dependence on the realized wage in the final years of employment. This time-averaging feature is achieved by a DC plan because benefits will depend on the contribution in each year of service, rather than on a final wage formula. Although inflation-adjusted career average DB plans would achieve the same goal, in practice these plans are quite rare. In fact, the only major DB plan that pays a benefit computed in such a fashion is the Social Security system.

It is often asserted that a DC plan subjects an employee to the investment risk associated with the performance of the fund's assets, whereas in a DB plan such risk is absent. However, it is always feasible for a DC plan to select an investment strategy which has low risk even in *real* terms. There are, however, no strong *a priori* reasons to believe that most individuals would choose to invest accumulated DC funds in the lowest risk asset. DC plans typically offer employees sufficient flexibility to select a risk-return strategy suited to their individual preferences and circumstances. In contrast, DB plans force individuals to accumulate the pension portion of their retirement savings in the form of nominal deferred life annuities and thus limit their risk-return choice.

DB plans have accrual patterns which are inherently backloaded. DC plans can be backloaded too by choosing a contribution rate that rises with a worker's age and tenure. Therefore, the salient inherent differences in accrual patterns between the two plan designs is that DB backloading is stochastic in the sense that real benefit accruals depend upon the rate of wage inflation. This seems to be an avoidable source

of uncertainty which both parties (employer and employee) might benefit by shedding.

It is commonly assumed that considerations of portability favor DC plans. The typical justification is that the worker in a DB plan who leaves his job for reasons beyond his control forfeits future indexation of benefits already accrued. It is further asserted that there are implicit contracts between employees and firms which require larger total compensation (wage plus pension accrual) for more highly tenured workers. Hence, termination of employment causes a forfeiture of the ability to work for advantageous total compensation rates in particular, indexation of total pension accruals). Under this line of reasoning, DC plans are more portable. Clearly this advantage of DC plans is most apparent during periods of inflation.

The authors conclude that neither type of plan can be said to wholly dominate the other from the point of view of the employee. Whether one is better than the other depends both on employee preferences and on uncertainty about inflation and interest rates.

Individual Benefits and Incentive Effects

To find out what the incentive effects of pension plans are, Edward P. Lazear and Robert L. Moore in "Pensions and Turnover" analyze the relationship between pension plan versions and worker turnover. There are two primary innovations in this empirical work: First, they use data from six different firms that include information on the precise provisions of the firms' pension plans. There is considerable variation in the individual plans' provisions. Second, instead of considering the relationship between accrued pension wealth and the probability of leaving the firm at a particular age, the authors consider the option value of retirement now versus working for an additional year. The option of working an additional year allows the employee the chance to choose the best of subsequent retirement years. For example, an employee who enters the plan with a ten-year vesting period has no accrued pension wealth during the first ten years. Nonetheless, working during the third year, for example, instead of retiring at the end of the second year, brings the worker nearer to the year in which he will be vested. The option of working until the vesting year is not foreclosed if the person remains with the firm. The authors argue that at any age the option value of continuing work is the appropriate variable to include in a regression framework.

The authors' initial results show that a 10 percent increase in the option value reduces the probability of turnover for older workers by 1 percent. They predict turnover rates to be twice as high for workers without pensions as for those with average pensions. The actual change

in turnover is predicted to be 4 percent instead of 9 percent for workers without pension plans. The paper also investigates empirically the difference in the implications for turnover of the two measures of pension value, that is, the more commonly used accrued pension wealth versus the pension option value as defined by the authors.